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Slight Rise In DP Salary Levels Seen

By Michael Merritt
CW Staff Writer

PALO ALTO, Calif. Salaries of programmers and other DP personnel have risen in the last year, according to the most recent survey by Source EDP, a national placement firm.

The Source conclusion differs from that of the Robert Half agencies, which saw a 2% to 10% drop in starting salaries [CW, April 14]. Source sees a slight rise in DP salary levels, generally 1% to 2%.

Speaking on the apparent discrepancy, Source President M.R. Parr told CW: "Employers are anxious to reduce costs at any time, and particularly during periods of economic downturn and resulting profit squeeze. We have certainly heard the lower ranges requested, but we have also observed, and participated in, the resulting hiring."

"The significance is not in the stated ranges but rather in the actual starting salary paid. In point of fact, most employers are still more interested in worth than in price," Parr said.

Examination of actual salaries of more than 8,000 computer professionals involved in the Source survey in January 1971 (compared to its 1970 survey) shows increases in all but two of the 27 categories studied.

These two, marketing representatives and marketing management, reflect the negative influence of the 1970 economic slump on professionals with commission/bonus compensation plans.

In all of the other 25 categories, there were increases in median salary ranging from a minimal \$140 per year for commercial programmers with one to two years of experience to \$3,030 per year for systems managers in the medium size (IBM 360/350, 370/145 or equivalent) installations.

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Doctor's Helper

These cartoons lead patients through a medical history interview on a terminal under a University of Missouri research program. The drawings are associated with the following questions: "Have you noticed any coughing or hoarseness lately?" "Have you ever noticed or been told that your heart does something different?" "Have you noticed your skin being itchy or having a rash?" "How often do you get nervous or upset?" Story on Page 4.

To Measure DP Efficiency

Compumetrics Group Is Born

By Phyllis Huggins

CW West Coast Bureau

SANTA MONICA, Calif. "It is incredible that we have corporations spending \$20 million to \$30 million a year on computing and they don't know what they are getting for their money. There is no way today of measuring hardware efficiency, software efficiency or results," said Dr. Richard Hamming of Bell Labs, kickoff speaker for the first meeting of the ACM Special Interest Committee on Computers.

"Here tonight we are founding an entirely new body of knowledge," continued Hamming. "Within 10 years we will be able to predict reasonably well what the software and hardware will do and its use for management."

"We will have better quality control, somewhat better software and we'll be able to predict better for management."

In 20 to 30 years Compumetrics will be an established field such as biometrics or psychometrics.

The speakers felt the mystique of computers may be abolished forever if Compumetrics succeeds. As Robert Gordon, ad hoc president of the group, said, "A bank will allocate one half million dollars for a computer program without any assurance

that when it is finished it will do the job it is supposed to."

Hamming added Bell Labs had begun a multimillion dollar project that he predicted would fail. There was no measurement avail-

Package Builds Code In Cobol, BAL, PL/I

By Don Levitt

CW Staff Writer

BOSTON—Source programs that include many housekeeping tasks, definitions of files and program control elements and a standardized program sequence, but no detailed problem-solving logic, can be generated in any of three languages by a software system just being introduced in this country.

The Standard Programming Logic (SPL) system, developed in Germany, produces these "skeleton" frameworks in Cobol, Assembly or PL/I, at the user's option, from parameter cards. Output from SPL can be directed to punched cards, magnetic tape, disk or line printer according to a spokesperson for Cullinane Corp., which is marketing the system in the U.S.

SPL can provide read routines, including OPEN and CLOSE, for up to 18 input files and the matching of input records by as many as 18 key fields with different priorities to determine which record should be processed next.

The user, however, has to develop and code in conventional terms the actual problem-solving logic once SPL has made the comparisons and set indicators of the results, Cullinane said.

In addition to detailed program logic, the SPL user must insert definitions of the data fields in the input records. The SPL system also has no provision for defining or processing output files. This portion of a program developed under SPL is left completely up to the user.

The SPL-generated program provides data and break control, entry and exit routines and considerable imbedded commentary so that the user can follow the skeleton program, segment by segment. The locations within the skeleton at which the user must add coding are clearly marked * * * Insert Routine here * * *

The SPL package is modular allowing the user to add provisions for only the language or languages he wishes. The system operates under IBM DOS or OS/360. It also can be adapted for all three languages, would require no more than 30K bytes of storage.

The package has also been implemented on the RCA Spectra 40 under TDOS or DOS, Cullinane said.

SPL is priced at \$9,000 for the first language under a three-year lease. Price of the second and/or third languages will be about \$3,000 each, Cullinane Corp. is at One Boston Place, 02108.

able, however, to back up his prediction, so management suffered the costly loss.

"You cannot have a science without measurement," said (Continued on Page 2)

New ICL CPUs May Go to U.S.

By Frank Panta

CW Staff Writer

NEW YORK—International Computers Ltd (ICL), England's major manufacturer of computers, has expanded its 1900 series to include several models that compare favorably with the IBM 360/370 models on a price/performance basis.

The systems will primarily be offered to American users with international offices, but ICL did not close the door on other American users.

The new models include four S series processors, a new version of the current 1902A, a 60-mil character disk system, a communications processor and several additions to the software library. A remote job entry version of the present 1901A was also introduced.

The 1902S, 1903S, 1904S and 1905S are all said to offer major increases in performance over the earlier A series models which

will continue to be available.

The 1906S, the most powerful ICL computer, and competitive with the 370/155, has slated wire memory with a 300 msec 24-bit word cycle time. Memory sizes available are 128K, 192K, 256K, 384K and 512K words. The memory is four-way interleaved.

Peripheral transfers are accomplished independently through a separate Peripheral Processing Unit which provides up to 43 channels with a total throughput of 11M char/sec. Typical configuration prices range from \$50,000 to \$150,000/mo.

The 1904S uses a semiconductor memory with a 300 msec word cycle time and a 175 msec access time. Memory sizes available are 32K to 256K words. Main storage may be reconfigured by means of operator switches. The PAC (Peripheral Autonomous Controller) includes 38 channels with a total

throughput of 6 M char/sec. A typical configuration can range from \$25,000 to \$50,000/mo.

The 1903S uses core memory and has a cycle time of 1.5 msec/mem. Capacities from 16K to 128K words are available. Six peripheral channels and 18 interface channels are included in the PAC for a total of 1 M char/sec.

The 1902S and 1902A are disk-oriented with up to eight drives. The systems allow multi-programming up to four programs on configurations of 16K words or more.

The core memory of the 1902A has a 6 msec cycle time and is available in capacities of 12K to 32K words. Channel throughput is 320K/sec. The 1902S has a 3 msec cycle time core memory with 16K to 48K word capacity. Throughput rate is 500K/sec.

Prices of typical configurations of the 1902A range from \$40,000. (Continued on Page 2)

Systems People Told to 'Clean Up Their Own House'

By Thomas J. Morton

CW Midwest Bureau
CHICAGO — The time has arrived for the DP professional to "clean up his own act," to start remembering that he is a part of the corporation paying him, to be certain that his systems are providing information, and not just an electronic form of creative expression for his own people alone, and to begin to understand effectively both the man and the job of the man to whom he provides the information.

This was the consensus of the speakers at the 24th Annual International Systems Meeting of the Association for Systems Management.

Wayne E. Swearingen, president of LVO Corp. of Tulsa, Okla., told a packed house that he compared the average EDP report with the red warning lights on the dashboard of a car. Once, a warning light on his car kept flashing, he said, indicating an overheating engine when, in

fact, it was not.

The flashing red light was easy to correct; he simply had it removed, he said. In EDP, the correcting was not always as simple, Swearingen continued.

President's Viewpoint

"All the president sees from his systems group (besides a large General and Administrative expense item), is a two-foot stack of computer printout, most of which contains 'control information,'" he stated.

"To apply this to business, that stack of computer outputs is worse than useless to me."

Swearingen suggested that the means of useless information spewing out of computers under the name of important data could be reduced if the managers of systems took the time to learn how to work through people.

To fill the needs of top management, systems people had to learn something of management to be able to determine the critical information needed by the top and to reduce the temptation of forwarding unwanted "products of his own creative talents," and to bear down on that information "which is critical

to the top man."

David J. DeCrane, speaking on data base management, told his audience that the tide had turned. He said that historically EDP managers had been telling functional users in a corporation how they must run their business so that it would comply with the requirements of data processing.

"Now," he said, "it is time for the systems people to clean up their own house."

Defining a data base as "a common definition of data elements used throughout the organization for the preparation of management information," DeCrane said it is now necessary for the DP professional to look

at his data elements for redundancy.

It was time, he said, for the systems people to "call things the same name everyone else in the corporation called it; eliminate duplication from file to file; and to consider the time frame in dollar values for information required."

"Don't," he said, "build a general ledger report with the response time of an airlines reservation system just because it is possible to do... or possibly more intriguing to do."

DeCrane maintained that a "card system could contain an adequate data base even though the purists said only a sophisticated, file organization tech-

nique in a tree-like structure constituted a data base."

Safeguards

Another point covered by the speakers was the preparation of a center for disaster, both natural and man-made. Costs of preparation, it was said, could never equal the costs of a disaster.

"One disgruntled employee can wipe out a business," a speaker remarked, emphasizing the fact that with the increase of sophistication of equipment and software, the increase in potential loss is proportionate.

"Hardware is the one commodity that is the most guarded the most," he stated.

New ICL CPUs May Go to U.S.

(Continued from Page 1)
to \$10,000/mo while those in the \$25,000 range from \$8,000 to \$18,000/mo.

The new disk system for the 1900 series, the EDS (60), with a capacity of 60 million characters, has nearly twice the capacity of the maximum IBM 2314 system. Either seven or nine

drives, using 11-disk packs, can be in a system. Average access time is 47-1/2 msec.

The 7903 communications processor allows communications between a 1900 series computer and remote devices, such as teletypewriters, video display units and communications terminals, over telephone and telegraph

lines. It is equipped with a 1.1 µsec core memory in sizes from 16 to 32K 16-bit words.

Software announcements for the 1900 include a data base system and new compiler, as well as a new version of the George 3 operating system.

Two interactive compilers, Basic and Fortran (Fortran), were added to the timesharing software. Both versions will run under either George 3 or George 4 (paged version of George 3) operating systems.

First deliveries are scheduled for January 1972.

Data Bank to Hold 100,000 Student Files

LOS ANGELES — Records of 100,000 students at eight Los Angeles community colleges will be kept in a central computer data bank.

The system, which will be in effect next spring, will contain no safeguards to prevent misuse of data by college employees, despite recent revelations that colleges elsewhere school employees leaked supposedly confidential data on political dissenters to the FBI and Army.

Terard Mueller, director of data processing for the colleges, stressed that the most sensitive information would be excluded from the data bank. In particular, it will not contain medical, counseling and disciplinary records.

The data bank will contain name and address, past course and grades, prior education, current program and participation in many extracurricular activities.

Many colleges view this information

as confidential but non-sensitive. The FBI and Army, however, have expressed a particular interest in getting information on students who participate in black studies programs or who take courses dealing with the USSR or communism.

Mueller said that policy on data release would be up to the heads of the respective schools, but another spokesman said officials, students themselves and law enforcement officers, but would not be released to prospective employers.

Two Levels

The data bank will be a two-level system. Identifying information and current program will be kept online and accessible by IBM 2260 CRT terminals at each school. Other data will be kept off-line.

When the system is fully operational in two years, it will be on

an IBM 360/50. Social Security numbers will be used as student identification numbers.

ACM Special Interest Group To Measure DP Efficiency

(Continued from Page 1)

Hamming, "and you cannot have measurement without a science." He told the group that they had only themselves to lean upon.

"The history of mathematics is one where they have screamed and hollered that different things couldn't be done. Then when sufficient pressure was put upon them they found that yes, the things we told them could be done, could be done. Statisticians are now getting into the same unfortunate state. Nothing new will be done with them. This means we are primarily left

with ourselves."

Hamming felt it was essential for the computerics group to be formed. One man in an organization can put little or no pressure on his management, he reasoned, but if work is being done outside on the subject, then management has to listen. In addition, when discouragement hits, and no one understands, he said, the individual knows where to find someone's shoulder to cry on and get the encouragement.

The other purpose of such a group is to supply individuals with data. Computerics has a three pronged approach. The group wants to be able to measure the performance of hardware, software and results. When questioned as to whether the decreasing costs of hardware and the hope for more simplified languages didn't make efficiency irrelevant, one man in the audience said, "We've been saying that since the 1401 days and it still hasn't happened."

Another attendee cited the case of IBM 650P1 program running 400 minutes. When measured it was found that 60% of its time was in a loop. Six states were in the chain and the running time was cut 20 minutes.

Hamming said he felt 10% of computer time was used efficiently and the remaining 90% used foolishly. "We are so had that we use bad software and bad machines for the wrong things."



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Symbol System at SJCC

Processors Control Software

PALO ALTO, Calif. — An unusual distributed processing system which assigns traditional software functions to be controlled by hardware will be described in four papers at the Spring Joint Computer Conference.

Began as an internal project at Fairchild Camera and Instrument Corp., the Symbol system, operating at Iowa State University, uses hardware processors to perform such functions as memory management, I/O peripheral control and compilations.

The system is composed of six processors with hardware logic. The first translates the "Symbol" language (described as an extension of Algol in the direction of PL/I) into Polish notation strings of commands. These strings are then stored in the system's main memory, consisting of 64K bytes of core and a 256K 64-bit word head/track disk virtual memory for execution by the second processor.

Third Processor

A third processor handles allocation of programs, divided into pages, between the main and virtual memories. All memory addresses are symbolic, being translated in a name table, and all assignments are dynamic, depending on current load. An additional processor is assigned to the task of keeping track of available memory. Data fields are variable in length, which can be changed during program execution.

All I/O operations, including communications peripherals as well as up to 32 time-sharing terminals, are controlled by still another processor.

The overall system operation is controlled by a system supervisor, a processor with the hardware equivalent of a software operating system. It assigns tasks, keeps track of errors and handles interrupts. The time-shared software system is interrupt-driven.

A feature that may surprise some observers is the use of a single memory bus to connect all processors to memory. The usual multiprocessor system has multiple memory ports. Multiple ports could be provided without affecting the basic design, a Fairchild spokesman said.

In some cases, the substitution of hardware for software worked very well, according to one Symbol designer. Memory management and peripheral control were cited as particularly well adapted to this approach.

Compilations proved to be a mixed blessing, with very high speed (76,000 statements/min) but insufficient flexibility. A table-driven ROM might have been helpful to remedy this.

The Symbol system was first specified in 1965, with the bulk of development taking place in 1968 and 1969 by Fairchild and a team from Iowa State University. It was delivered on Jan. 20, 1971.

The Symbol was never intended as a production system, according to the designers, but it may indicate the direction in which future trends in computer development would go, with an increasing emphasis on hardware logic.

Study for NSF Backs Use of Automation For Chesapeake Bay

CW Washington Bureau

WASHINGTON, D.C. — A computer may be used in management and control of the Chesapeake Bay, which affects six Northeastern and Mid-Atlantic states directly as a major regional and national resource. The report was outlined in a report submitted to the National Science Foundation.

The report calls for establishment of a detailed and complex data management system, with a 360/91 computer, including inventory and relationships of all elements, natural and man-related, involved in the bay and its drainage basin; lists research projects that should be performed; and suggests an organization to manage the large-scale research program.

Began Last July

The study, part of NSF's former program of Interdisciplinary-Research Relevant to Problems of Our Society (Irrpos), began last July and was conducted by scientists and engineers of Johns Hopkins University, the University of Maryland and the Virginia Institute of Marine Sciences. It was financed by NSF.

The data bank to be developed would be available to assist scientists as well as regulatory and legislative decision makers and others.

Hospital Takes Its Census

WOOSTER, Ohio — A computer installed here is answering the question: "Who's on first?"

The computer also is supplying administrators at Wooster Community Hospital with the answer to who's on second, third and even the fourth floor of the hospital. The computer, an IBM System/3 Model 10, is providing a floor-by-floor census of the 195-bed hospital, including a count of patients, their bed assignments, dates of admission and the attending physician.

"This type of information is important," said hospital administrator Waldo Landis, "in order to effectively plan for all the necessary services that we maintain for patients."

"It's essential for us to know, for example, when we can expect to have beds available. As the number of patients requiring in-hospital care increases, efficient allocation of our resources becomes even more important."

"Of equal significance," he added, "the computer enables us to more effectively track our financial position. The better job we do of keeping our receivables up to date, the more effective we can be in controlling costs."

Staff members use reports generated by the system to schedule professional and hourly hospital employees to meet the total balanced needs of patients.

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APPLIED DATA RESEARCH
THE SOFTWARE BUILDERS
CREATING THE AUTOMATIC LIBRARIAN, ADR, THE SOURCE, THE HISTORY, THE INDEX

NEW FEATURE: COBOL SYNTAX CHECKER. A syntax checker has recently been added to the Librarian to enable a user to rapidly check the syntax of a COBOL source program as it is being updated. The checker will increase program efficiency and accuracy, as well as save COBOL compiling time.

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Rural MD of the Future—Part 1

Health Plan Creates New Hope

By Thomas J. Morton

CH Midwest Bureau
SALEM, Mo. — When a patient enters Dr. B.J. Bass' office in this rural Missouri town, he gives the doctor's secretary his name, age, address, birthdate and birthplace, dates of his last visit to the doctor, why he came in before and the reason for the current visit.

The nurse also obtains information on what medication he is using (if any), his allergies, his next of kin and his insurance coverage.

None of this information is used in the computerized program in which this patient will soon participate.

The secretary then assigns the patient a number. All measurements and readings, tests and analyses are recorded in that number known only by the doctor and his staff when the number is identified with a patient.

Height, weight, temperature, pulse and respiration rate are determined in the traditional manner and recorded for later input.

Automatic blood pressure is taken on the patient, and again

"...Doctors, engineers, lawyers, specialists in equipment, data processing, electronics, all participated the doctor pointed out the window to where an elderly man was coming up the steps to give them out there the best medical care I can provide."

The readings are hand-recorded for later input.

The patient's vision and hearing are tested, recorded for later input, and the patient receives a chest X-ray.

The X-ray is first examined by Bass, then forwarded to a radiologist in the medical school of the University of Missouri at Columbia. Both the radiologist's consultation report and Bass comments are entered into the numbered patient's file.

In x-ray, the doctor can use his Automated Physician's Assistant (APA) system to obtain consultation from both the examining radiologist who has already entered his comments into the computerized patient record as well as participate in the Missouri Automated Radiology System (MARS).

MARS enables Bass to compare his findings with a bank of other radiological information on the CRT terminal in his office. The system is programmed towards the mathematical probability of the known lung and cardiac diseases and offers the online general practitioner the consultation experience of years of work, speeding and improving diagnostic techniques.

Routing of the analysis is performed on the patient at the clinic, and the results entered into his records. Blood samples are sent to the medical school in Columbia for automated analysis.

Next the patient receives an electrocardiogram (EKG) examination. This provides the nurse with a printout record for submission to the doctor and places the results on magnetic tape for on-line input to the computer.

Next the patient is interviewed by the Automated Patient History Acquisition System (APHAS) developed by the Missouri Regional Medical Program. A patient at a CRT terminal, a slide screen and a tape recorder, the patient is asked questions verbally (on tape) and visually (on the CRT or by slide).

The patient answers the questions, first generalized to locate specific complaints, then localized towards specifics. The patient's answers lead the program into the specific areas of complaint, where questions then lead the patient towards specific diseases or injury symptoms.

The patient's history is also recorded into his file and printed out, along with probabilities on disease specifics for the doctor. The printout is obtained in a room which no patients have access.

Then, after all the information work has been taken and analyzed, the printout received and the testings completed, the patient sees the doctor.

The doctor now has a complete report on the patient, his past history and current complaint along with consultation-like ana-

lysis of the specific complaint or chronic ailment.

One more automated feature serves Bass: a bank of more than a million pages of scholarly and scientific articles from over 120 journals has been microfilmed and stored for fast automatic retrieval.

If Bass requires information on any specific ailment or medical findings of a particular area, he can query the computer in Columbia and receive a "fax" copy of the material requested.

"We have been treating patients here," Bass said, "since 1953, and if this system were not available we would continue to cure the sick and the injured."

"But with this system, we are more effective, much more flexible, we must learn information in many more ways than was practical before."

APA is the result of mixed disciplines working together towards a goal of just one of the disciplines, that of medicine providing better health care in those areas where facilities for research and consultation are, non-existent.

This is the prototype of a system that the creator hopes will spread across the country bringing with it a new life style for the rural family doctor, new health care for the people who have new needs.

The doctor described it best. "Telephone men, IBM men, doctors, engineers, lawyers, specialists in equipment, data processing, electronics, various fields of medicine, and people all participated..." he pointed out. "...the wisdom of the elderly man was coming up the steps to give them out there the best medical care I can provide."

Tech Sessions Spike JCC Nights

ATLANTIC CITY, N.J. — With no competition from the "night life," the Spring Joint Computer Conference. May 18-20 will feature several evening technical sessions of interest to users.

The first, Tuesday at 8 p.m., will cover the competitive evaluation of vendor-supplied interactive systems. Organized by representatives of Ford Motor Co., the study will examine the characteristics of interactive systems from the standpoint of on-line usability.

There will be two evening sessions Wednesday, one on the "hot" issue of ecology, the other on possible solutions to the world literacy problem.

Participants in "computation, decision making, and the environment" will include educators and scientists.

The world literacy session will evaluate Project Dovack, which is being used to teach small illiterates.

Another Tuesday evening meeting will be held by ACM's Special Interest Group on Computers and Society. It will feature Lawrence M. Baskin, chief counsel for Sen. Sam J. Ervin's recent hearings on Privacy and Data Banks.

News Wrapup

Court Orders Probe of Army Spying

WASHINGTON, D.C. — The constitutionality of the Army's surveillance of civilians must get a hearing in Federal Court, according to a ruling handed down last week by the U.S. Court of Appeals here.

A suit filed in February 1970 by the American Civil Liberties Union on behalf of the Central Committee for Conscientious Objectors and individuals who felt they had been spied upon was the issue. It had been dismissed last year at the government's request by U.S. District Court Judge George L. Hart Jr.

The suit now goes back to Hart, who told CW that it could take months before anything definitive occurs.

Rapid Transit System to Run Through Campus

WASHINGTON, D.C. — A personal rapid transit (PRT) system which will be computer operated will be built in Morgantown, W. Va., the Department of Transportation announced last week. The demonstration transit project will be built around and through the West Virginia University campus in Morgantown and will be designed and managed by the Jet Propulsion Laboratory of the California Institute of Technology.

JPL has selected the Boeing Co. to develop and construct prototypes of the vehicle system and the Bendix Corp. to design and develop the automated control and communications system.

Officials Happy With Computerized Vote

COLUMBIA, Mo. — Boone County voters recently selected their candidates for office with a computerized ballot and election officials were satisfied, although the procedure was not as efficient as had been hoped.

Final totals were not available until two hours after the expected completion time.

The county clerk said that this was a "very complicated election." Nearly 5,000 write-in votes had to be counted at polling places and ballots from all over the county had to be certified before going to the DP center for tabulation.

Problems with the reader also delayed the election. And officials detected a miscount by the computer and returned the ballots for correction.

Citizen to Protest Variance for IBM Sign

MALHAW, N.J. — A local citizen plans to take legal action against the township Committee for granting IBM a use variance to erect a company sign at the entrance to its new \$10 million facility in Franklin Lakes.

The committee felt that denial of the variance would create a hazard on IBM and a traffic hazard by making it difficult for visitors to find the plant.

"You've sold the people of Malhawan down the drain!" Louis Rizzo charged after the vote. "It's disgusting that you don't even defend your own ordinance," he said, referring to the sign ordinance which allows a maximum 15-square-foot sign. The local sign ordinance bans commercial signs in any residential zone.

Computer Has Big Say in Tax Meeting Date

PHOENIX — Whether the special session on taxes and school financing will come this month will depend on a computer to determine all the facts and figures.

"Until we know where we are, we're kidding ourselves in discussing a specific date," said Senate President Bill Jacquin (R-Tucson).

Dr. Arlyn Larson, legislative assistant to the speaker and the president, said that several different programs will have to be set up and run "before they (the lawmakers) find one agreeable."

The computer will take data on school statistics and the assessed valuation for 1970-71 and figure out the flow of state aid to each district would have been affected if certain proposed plans were in effect now.

A Man's Word? Not So, Say Crimefighters

HOUSTON — Fifteen women using a computer to analyze facts about organized crime are carrying Women's Liberation one step further while allowing male agents to be released for field work.

The program is called Organized Crime Intelligence Language. It feeds data about organized criminals into the computer, Shuraid, and the analysts can study the facts and get an insight into the next move of organized crime.

It's Rough All Around — Even for a King

CAMBRIDGE, England — A King of England has falsified computer accounts worth \$720 in an attempt to beat his firm's computer because it was a "horrible impersonal machine," his lawyer told a court.

Henry King, a wages clerk, pleaded guilty to stealing the money and was fined \$240 and ordered to compensate the company within two months.

After hearing several people say it was impossible to fiddle a computer, I began to wonder if it was true, so I tried it out," King said.

COMPUTERWORLD

The Weekly Computer News

730 E. W. PA. DR.

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Ryan to Quarterback DP Activities for House Unit

CW Washington Bureau
WASHINGTON, D.C.—Former pro football quarterback Frank Ryan is preparing to call some of the computer signals for the House of Representatives. Ryan, on leave as president of his own computer firm, Frank Ryan Computer Services in Cleveland, had been a reserve quarterback with the Washington Redskins the past two seasons.
He recently announced his retirement from the Redskins, and on April 1 he became a part-time consultant with the House Administration Committee.
On July 1, Ryan will move into an

appointive post as director of information services with the administration unit.
He will aid in the design, purchase and installation of computer systems and the coordination of EDP activities for the House. He will also act as the congressional coordinator of computer operations

DP Profile

with the Office of Management and Budget.

"Frank is eminently qualified for the job," said Louis Freed, assistant staff director with the administration committee.

Ryan was among a number of individuals interviewed for the newly created position. "It was the idea of Rep. Wayne L. Hays (D-Ohio), chairman of the committee, to bring in a person with computer expertise who would work with someone who has congressional experience," Freed is the congressional man, having spent 13-plus years in the House and Senate.

"Catching Up"

Since Ryan is still new to the consulting post he now handles, he admits that he has "a little catching up to do. I'm going through a learning process; I've never been in government circles before."

One of the projects Ryan will become involved with is a display/retrieval system that would enable the House to handle voting and quorum calls on the floor of the lower chamber (CW, March 3). The system was designed by Informatics Inc. and the design was delivered to the clerk of the House about April 1.

"At this stage," Ryan said, "I'm taking a look at Informatics' proposal. We have no specific plans for letting hardware bids for the system right now. This will be a matter of course; we want to review the situation thoroughly. Rather than rush

into something, we'll go at a steady pace which will assure some success."

As a pro quarterback, Ryan's deliberateness aided his success. During a 13-year playing career with the Redskins, the Los Angeles Rams and the Cleveland Browns, Ryan passed for more than 16,000 yards and three times won All-Pro honors.

He has a Ph.D. in mathematics from Rice University, and his Cleveland-based firm, he said, offers a total systems approach in the sports area. The company helps football teams, for example, to use a computer to speed analysis of trends and collating of information. The Redskins coaching staff last year and this coming season is a Frank Ryan customer. Looking ahead to his new position on Capitol Hill, Ryan said: "I've gotten some partial impressions so far. There is a great need for automation in several areas, and I have observed a great spirit of cooperation on the Hill" to help put data processing to work for the Congress.

NSF Awards Miller 2-Year Grant to Study Privacy, Computers

CW Washington Bureau
WASHINGTON, D.C.—The National Science Foundation has awarded a two-year \$160,000 grant to Arthur R. Miller, a law professor at the University of Michigan and a noted privacy advocate, to search for ground rules protecting individual privacy in the computer age.

Miller, author of "The Assault on Privacy—Computers, Data Banks and Dossiers," was lead-off witness earlier this year before Sen. Sam J. Ervin Jr.'s (D-N.C.) Subcommittee on Constitutional Rights. The Senate group held hearings on computers, data banks and the Bill of Rights (CW, March 3).

The first phase of the NSF-sponsored study will take 12 to 15 months and will involve an investigation of the existing practices in information handling by social scientists, university information systems and some government social welfare agencies.

There will also be studies' overseas, where some countries, according to NSF, are further ahead in formulating protective policies.

The second phase of the project will be evaluation of the data and experience gained and publication of a report offering a computer-privacy-confidentiality program for possible use by data handlers.

The paper will also analyze the legal implications and consequences of computer information activities, and explore the feasibility of safeguards.

Independent Judgment Offered for 370/135

PHILADELPHIA—"The 370/135 offers a combination of virtues that few buyers of small- to medium-scale computers can afford to ignore: impressive price/performance, advanced hardware technology, high-performance peripheral equipment, and proven software."

"Against these virtues, the prospective buyer must weigh the disadvantages of IBM's unbundled support and relatively inefficient software," according to a 10-page report, *The IBM System/370 Model 135: an Independent Appraisal*, by Datapro Research Corp. Copies of the \$10 report are available from 2204 Walnut St. 19103.

A Rather Expensive VW

NEW YORK—Under a new program to go after motorists who have three or more traffic tickets outstanding, the city's Parking Violations Bureau towed away the first of 375 cars—a Volkswagen bus owing more than \$3,400 in unpaid parking tickets.

Nine city marshalls, armed with computer printouts of car descriptions and plate numbers, took to the streets. With the new system marshalls can seize personal property if the violators do not pay up.

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May 17	Minneapolis	9:00 a.m.	Minneapolis
18	Chicago	9:00 a.m.	Chicago
19	Pittsburgh	9:00 a.m.	Pittsburgh
20	New York City	9:00 a.m.	New York City
21	Boston	9:00 a.m.	Boston
24	Toronto	9:00 a.m.	Toronto
25	Detroit	9:00 a.m.	Detroit
26	Philadelphia	9:00 a.m.	Philadelphia
27	Washington, D.C.	9:00 a.m.	Washington, D.C.

All seminars 9:00 a.m. to 12:00 noon



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Editorial

The Special People

At the risk of recreating the computer mystique, it still must be said from time to time that computer people really are special.

It must be pointed out not to make them feel superior but to remind them that they have a special responsibility.

Like the executive and the military commander, their mistakes tend to be magnified out of all proportion to the events that led to the mistake.

This is the reason that executives and commanders often seem to ponder an unnecessarily long time before making apparently simple decisions. And this is why computer people must avoid snap decisions on apparently simple matters.

It's a nice feeling to know that one of your applications is saving a lot of humans a lot of boringly routine work.

But we must also take responsibility for the simple mistakes that create problems for thousands of people.



'How You See What He Really Looks Like'

Letters to the Editor

CDP Holders Have Questionnaire

We share Donald R. Collins' interest in improving the CDP and the professionalism which must accompany the exam to make it meaningful (CW, Letters to the Editor, April 14). Since February, over 40 CDP holders in the Chicago area have been actively engaged in developing a program to meet the challenge. We are now concentrating our efforts in three areas: the examination itself, dissemination of knowledge about CDP and what it means, and what type of an organization we should be—dependent, affiliated or what. We are currently working on a questionnaire (such as Collins suggested) and would appreciate any contact with other local CDP groups doing work of a similar nature. With a pooling of efforts, we have a great opportunity to produce some definitive results.

We encourage others to join with us at the local level to continue this effort.

John A. Driscoll, CDP

Chairman

Arthur A. Chapman, CDP

Secretary

Ad Hoc Association of CDP Holders

CNA Insurance
310 S. Michigan Ave.
Chicago, Ill. 60604

Here's 'Yes' for Involvement

In response to Donald R. Collins' request for opinions regarding CDP organization, questionnaire, etc., please consider this a very strong "yes" vote in favor of Taylor's involvement.

As a CDP holder of the first winter (Nov. 23, 1963) and as a member of the 1964 CDP test review board, I know I speak for many when I say that CDP should "evolve away" from DPMA, and be elevated to the position foreseen by myself and many other eight years ago. Somebody "inside" the business—like Taylor—needs to make something out of it. A questionnaire would be a hell of a good start!

A.K. McKeechie

Chicago, Ill.

What Is DPMA's 'Service'?

The Taylor Report, "Members Look More Like Markets From Park Ridge" (CW, April 14), really hit home with me.

I am a member of the Eastern Connecticut Chapter and have yet to find out what the "service" is. They need dues money, they need contributions, they need computer participation. But for what?

In fact, it is a social organization which because of small political cliques operates under the guise of being a service to its members when in reality its purpose is to see that members can mingle and

meet—nothing wrong with that, why don't we admit it?

Rum Blakeslee
Data Processing Manager

Plastic Wire & Cable Corp.
Jewett City, Conn.

More Information on Vidpi

The article on "Vidpi" Blind Programmers in the DP field is of much interest to me (CW, April 17). I would appreciate your sending to me any further information you may have available or a place of procurement for further information.

K.C. McNoley, Manager
Publications Programming

IBM Distribution Center
Mechanicus, Pa.

For information on Vidpi, we suggest you write to Richard J. Snipka, Bradford Computer & Systems, 220 East 42nd St., New York, N.Y. 10017, Ed.

Operation Has Several Packages

Someone is being misled about the fees charged by Operation Match for its dating service. I was recently visited by a representative of Operation Match, who tried to sell me a 36-month plan including computer matches, psychological testing and background checking for \$525.

I was told that the \$525 plan was the only one available through the company. This is in direct contrast to your article of April 7, 1971, "Marriages Mean Mismatches in Dating Business," in which you stated "Operation Match" does not charge the hundreds of dollars fees common to other such services. Twenty dollars for "Two to five" matches a month is the fee for one year...

Theodore A. Jean

"Operation Match" President Stephen Milgrom explained that there is one "package" available in each major market, and that the \$20 package (which now costs \$25) is marketed, for example, in the Boston metropolitan area, but not in New York, New Jersey, Los Angeles or Chicago.

Milgrom said the costs of hiring psychiatrists and establishing offices for every geographic area would be prohibitive, so marketing in many regions is done through the mail. In these regions, the one-year, one-time \$25 fee is available.

In other major metropolitan areas, the larger three-year package, with the "unmarried clients" and in-depth personality testing (farther than computer-processed profiles) is offered. Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. Letters should be addressed to: Editor, Computerworld, 787 Washington St., Newton, Mass. 02160.

Government, DP Industry Must Learn to Communicate

WASHINGTON, D.C. — A key to success in the DP community is communication. And to a large degree we fail miserably as an industry in communicating with those outside our profession.

The results of what I have in the past called our "talking to ourselves" syndrome are beginning to be felt. One area is in our dealings with the Federal Government.

At a recent hearing before the Board of Governors of the Federal Reserve System, Bernard Goldstein, president of the Association of Data Processing Service Organizations and head of his own company, United Data Corp. Inc., said that he had had one day to brief the board's staff on EDP prior to the hearings.

"EDP is a pretty complicated subject to try to understand in one day," Goldstein correctly told the board.

And just a few months ago at a hearing regarding professionalism before the Wage and Hour Division of the Department of Labor, the gap that exists between the DP world and the outside it was clearly in evidence. One of the examiners asked a computer industry witness for an explanation of software. After it was given, he commented, "I can't say I understand."

These two anecdotes clearly pinpoint the mushrooming problem: if we cannot communicate what we mean to the government, how can we hope that the government will come up with rules and regulations that will aid rather than hinder our development as an industry.

First, let me dispel one thought. Those of us who would

prefer that the government stay out of our business are being naive. Industry has shown that no matter how much it desires government involvement it traditionally seeks government relief and judgment on various matters.

The recession is a notable example. Industry has not provided the leadership to ease the unemployment problem. Realistically it could not because it was hurting financially. It instead has looked to the government which in its benevolent bumbling may yet come up with something substantial. Whether the government does or not, industry's reliance on government in this area intensifies the precedent set in the past: let Uncle Sam do it.

With data processing emerging in various quarters as a national issue—at the Justice Department in the antitrust filing against IBM, through the Federal Communications Commission in the microwave area, in the Congress with the privacy and credit questions—the Federal Government will become more and more involved in the activities of our industry.

A government that understands our business will be in a better position to deal more fairly with us. A government that must cut through a curtain of jargon to try to understand us will lose a lot in the translation.

Another impediment we must overcome is the innate fear that some in the government have about computers. They're the same people who have been told that a computer messed up their credit rating or fouled up their retail store billing. While they've never come close to a computer, they feel they've been victimized by it.

The EDP industry has a great deal of groundwork to do to overcome the misconceptions we have ourselves helped to create. It is a corrective job that each of us, each of us in some way must contribute.

D.C. Data-Line
By
Alan Drattell



Applications May Be Outstripping Technology

Are Visible Computer Errors Only the Iceberg's Tip?

In the recent ABM arguments some stress has been placed on Prof. Liklider's statement that current computer technology was inadequate to prevent errors occurring in our software systems.

Unfortunately, partly because of the political environment and partly because of the natural unwillingness to face unpleasant truths, the impact of the statement has been ignored by the computer community at large, and was certainly ignored

The Taylor Report

By Alan Taylor, CDP



In recent months, however, I have been studying the occurrence of computer errors, to understand them a little better. My study was brought on particularly by a remark by James Moffat, CDP, assistant registrar for data processing at Arizona State University in Tucson. He told me he felt the criticism printed in this column about the university giving unknown grade codes was ludicrous, in view of the many other larger errors which had been made, and which they had "got away with."

DP Managers Agree

There is no doubt in my mind that many DP managers would agree with Moffat. They believe that there are many, many errors occurring in DP systems today — both in the software prepared by the hardware manufacturers, and prepared by themselves in house.

Very often the actual volume of errors, combined with the fact that many of them only occur under unusual circumstances, make them apparently too expensive to do anything about.

In particular, any systematic attack on them is simply too

expensive to be considered worthwhile. This means that errors exist which are, or can be, known about but which may be ignored and left in the DP systems.

Ignored For Five Years

Just how long errors can be ignored was brought out vividly for me in San Francisco at the Spring Conference of the Association for Systems Management last month. After my talk one systems analyst won a big cheer from the other systems types by pointing out that his experience was that the DP group never got around to correcting non-vital errors — and that he had been in the field for no less than five years! That cheer told me clearly that this ignoring of even acknowledged errors was not just an isolated incident, but instead was a usual occurrence.

At the same time some computer errors do get attention. We know this when we see the amount of time given to re-compiling and re-recompiling systems that have been "implemented" long ago, and when we look at maintenance budgets.

But the decision as to which error will get handled, which will be discovered but not ignored, and those which simply won't be looked for or acknowledged if found, must have some logic behind it. And I think it is the old, standard logic of the squeaky wheel. And naturally, the bigger the wheel that squeaks, the more likely it is to get attention!

Three Samples

Following up these two points — the Moffat comment and the San Francisco cheer — I looked at three particular cases where you would reasonably expect such conditions not to occur — where indeed you would not expect to find many errors. These cases have all been com-

mented on in the column before, for different reasons, and so form a random, if small, sample. They are the Master Charge case, the Educator's Consultants case and the Tucson case.

Master Charge has plenty of money to hire the best analysts. Educator's Consultants make a living selling the use of its software, and the university knows enough about data processing to be able to give postgraduate courses in it. These cases have all been commented on in the column before, and for different reasons. They therefore do form a random, if small, sample. What I did was to look for hidden errors that had not been known about when they were first talked about here, but which have since become visible.

Master Charge — 4 New Errors

Take the Master Charge case. Originally it was selected as showing arrogance in the placing of the mailing address in a non-standard position at the top of the envelope where it could be obscured by standard metering. Later, however, this system was found to also:

- Issue bills that were arithmetically wrong by hundreds of dollars.
- Issue bills that called for payment before the billing date.
- Confuse the reader with unnecessary data and abbreviations.
- Be unable to produce confirmatory data when promised — or for months later!

None of these were found in the first go-around — only afterwards. They can therefore be considered as being hidden errors.

5 New Errors

Nor was the Master Charge case. The Educator's Consultants case had the original error of using too short field lengths, and then using the field lengths that were available badly. Later it was discovered

that in addition to these it was possible for the system to:

- Completely omit grades.
- Completely omit subjects taken.
- Allow attendance reporting to fall two weeks behind.
- Confuse all-round mediocrity with good classroom work and low homework.
- Overprint computer data over important printed data, thereby losing both the computer-generated and the printed data!

Tucson Case — 6 Errors

Even more daring than either of the others, however, was the Tucson case. Here it turned out that the original complaint, not checking inputs, was invalid. Perhaps that is why it was found to have more hidden errors than the others.

In this case it was later found:

- That the operator had been told to obey run-sheet instructions.
- Obsolete forms had been used, omitting vital information.
- The university's rules were being broken by faculty members.
- Valid complaints resulted in the blame being placed on the innocent.
- The college failed to check the validity of the output.
- Bad coding of descriptive data (1 for male, etc.) had been used.

Now, I don't know what you make of these facts — the num-

ber that were discovered when searching into apparently simple cases, or the complaints of the systems mean that nonpriority cases just don't get attention.

I don't even know what I really get of it — not just yet. But I do think that it indicates that computer errors are a much more important topic of consideration than we have currently realized.

At the very least, I think that the current public distaste for computers is based on a veritable epidemic of computer errors (which is certainly with us), and much worse, it may be that the visible errors are only the tip of the iceberg.

And! That's a really chilling idea.

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IBM put Volkswagen back on the road three days after a total-loss fire.

On Friday, February 26, Volkswagen South-Central Distributors, in San Antonio, Texas, burned to the ground. The loss threatened to bring business to a halt for 70 Volkswagen dealers in Texas, Oklahoma, New Mexico, Colorado and Wyoming.

The entire computer installation, including a \$1 million System/360 Model 40, was destroyed. All that was saved were the magnetic tapes containing the



Gayle Jackson

company's records. Fortunately, the Volkswagen Data Processing Manager followed his company's emergency procedures and made sure they were locked



Skip Schroeder

Badger Robertson

in the computer room's fire-proof vault.

But even before the fire was out, Gayle Jackson, IBM branch manager in San Antonio and his local team (including Skip Schroeder and Badger Robertson) had already gone into action. They had the monumental task of putting together a \$1 million computer installation, including a System/360 Model 40 computer, two control printers, two card readers, two control units, a disk file, four tape drives, and eight key-punches. And they had to do it over a weekend.

At various IBM locations around the country, men went into action under the coordination of Don LaPointe at Western Regional Headquarters in Los Angeles.

In Poughkeepsie, New York, Charlie Glancey assembled a team that located, tested, and packed a Model 40 and all the other items that must accompany it.



Charlie Glancey



Don LaPointe

In Endicott, New York, George Martone and dozens of other IBM people worked on getting together the needed peripheral gear.

In San Jose, California, Jim Klemmer gathered 12 boxes of replacement disk packs for those that had been destroyed by the fire and air-shipped them to San Antonio. Things were starting to fit together.



Pete Weber

In the meantime, Pete Weber, IBM national account manager for Volkswagen, was flying to San Antonio. On Sunday, he met with Volkswagen executives and outlined a plan to install the new equipment in the basement of the local IBM office.

First, new disk files arrived from another IBM location in Texas. Then, the disk packs from San Jose. The computer tapes saved by the vault were tested on another IBM customer's computer. They were fine.

On Monday afternoon, after an 1800 mile trip, the van arrived with the Model 40. A task force of 14 customer engineers worked through the night to assemble, install, and test the system.

By 8:00 a.m., Tuesday, March 2, a new data processing installation, duplicating the one destroyed, was ready for business. More than 100 IBM people had worked to get VW back on the road.

When we say we want you to get the most out of your computer, we back up what we say with people.

People who go all out to get a job done.

And that is another reason we're the company behind the computer.



George Martone



Jim Klemmer

IBM.

The company behind the computer.

May 5, 1971

Random Notes

File Handling Strengthened Under 'Oscap' T/S Monitor

NEW YORK—File handling capabilities being added to the Operating System Communication Application Package (Oscap) will, according to Complex Systems Inc., make the real-time monitor a "total system" for the IBM OS/360 user who has on-line requirements.

Oscap is being adapted specifically to support two Compress-developed products: Amigos, a replacement for IBM's Index Sequential Access Method (ISAM), and Data Base Access Language, a replacement for Data Language/1, part of IBM's Information Management System (IMS/360). It operates under OS/360, MFT or MVT, requires from 10K to 30K bytes of core, and costs \$40,000 from 1250 Broadway, 10001.

'Curs' Reports I/O Used Under 'Power' Spooling

WASHINGTON, D.C.—Users of the IBM Power spooling system on 360s can read out the I/O utilization statistics developed by the system with the Computer Utilization Report System (Curs) from Computer General Corp. Without Curs, the user would have to write his own routines to access the Power-generated data, the company said. With the \$350 package users can have reports by function or department, or by day, week or month. The firm is at 1660 L St., N.W., 20036.

Service Helps Architects Pick Appropriate Product

NEW YORK—Architects are able to get lists of products appropriate for a specified type of building project, by generic name, through the Idac Systems Division, National Design Center. Idac's Building Information Program (Bip) also provides index keys so that users can access detailed information, product by product, from a microfiche library which is supplied as part of Bip.

The computer-generated lists of products cost from \$100 to \$470, depending on the complexity of the project. The microfiche library of 20,000 products plus a reader rents for \$85/mo., from 425 East 53rd St., 10022.

Cobol Compiler Is Adaptable

SUITLEND, Md.—A Cobol compiler that conforms to a subset of the ANSI specifications has been developed for the Univac 418-II by Johnson and Mattingly Associates, who note that the logic can be easily adapted to other machines.

The 418-II Cobol includes a symbolic debugging capability and provisions for a subroutine library. The compiler will operate on any 418-II with 18K words of core, four tape units and a Univac 1004 card processor. It costs \$20,000, from 3524 Silver Park Drive, 20033.

Film Processors to Get Service

DALLAS—Film processing organizations may soon be able to calculate pricing information, by order, and print the data on the order envelope, with a time-sharing system now under development at General Logics Inc.

The system is expected to determine full retail end discounted prices, and to show, on demand, the status of all film being processed. The firm is at 1546 Prudential Drive, 73735.

Users Coding in Cobol

Btam Unneeded With 'CRT-Interface'

By Don Leavitt
civ staff writer

PITTSBURGH, Pa.—The writing of application programs for in-house IBM 2260s or plug-to-plug compatible units is said to be made much simpler under DOS/360 with the CRT-Interface software system from Westinghouse Tele-Computer Systems Corp. (WTSC).

The package eliminates the need for IBM's Basic Telecommunications Access Method (BTAM) or any other communications handling software, WTSC said. It also allows the use of Cobol in data communications, since users are able to

write applications in Cobol, Assembler Language or PL/I.

With multithreading of messages, the system is designed so that an application program is able to handle any number of terminals.

The multithreading simplifies application programming, and permits it to be based on conversational single terminal logic, according to a WTSC source. Users are able to add new terminals to the system without complex programming changes.

With the CRT-Interface package, users can gain access to any file regardless of its

structure. Some otherwise comparable telecommunications monitors do not provide access to index sequential files, but CRT-Interface does, WTSC said.

An optional feature of the WTSC system provides program "roll-in/roll-out" so that the same core storage space can be used, alternately, by more than one application program.

CRT-Interface will be expanded to include support of remote 2260s and comparable units by the end of the year, a company spokesman noted. The package is written in a generative form of Assembler so that it can be tailored to the user's specific requirements. Functioning under DOS/360, the partition size needed would depend on the applications and the tailoring of the package.

The CRT-Interface monitor can vary from 2.5K to 11K bytes of storage. Allowing room for application programs, users should expect to devote at least 32K bytes to the system, a spokesman estimated.

The system costs \$2,500 under a five-year lease which includes two man-days of on-site installation support and three years of maintenance and program updating. After five years, the program becomes the property of the user, WTSC said. Westinghouse Tele-Computer Systems Corp. is at 2040 Ardmore Blvd.

PL/I 'Load-and-Go' Processor Geared to Scientific Functions

BROOKLYN, N.Y.—IBM OS/360 users can compile and execute scientifically oriented PL/I programs with the Polytechnic Load and Go (Plago) compiler/interpreter developed by Polytechnic Institute of Brooklyn (PIB).

Designed primarily for student users, Plago designers did not implement areas of PL/I more commonly used for business data processing than for scientific work. For this reason decimal arithmetic is not available.

The only files supported by Plago at this time are SYSIN and SYSPRINT. Use of any other file name in the Declare statements will be flagged as a syntax error. Likewise, Read and Write statements are prohibited.

The initial attribute of the Declare statement is also not supported by Plago. No character string parameter can be passed to the main procedure in Plago, the developers said. In IBM's PL/I (F), this can be done using the Part option on the Exec card.

Because it is a load-and-go processor, Plago cannot be used to generate object decks and the PIB system will not accept object decks of programs compiled under the IBM processor.

Avoiding much of the storage and processing overhead of the IBM language processor, the Plago translator is said to be 50 times faster than the IBM compiler. It is also six times faster than IBM-generated programs in execution time.

Typical of the jobs Plago has solved for PIB students is a maze search which took 1.31 seconds from entry of first card to printout of answer.

The only legal Plago variable attributes are: fixed (binary, not decimal), float (single and double precision), label, character and character varying. All variables are given automatic storage class attribute, PIB said.

The present Plago requires 80K bytes of core, although this can be modified by the Plago group at PIB. Plago can run under any OS P.C.P., MFT-II and MVT system with or without Ilap, a PIB source said.

Support for large core storage (LCS) is a standard part of Plago and allows the system to run in either fast or slow core with no apparent difference to the user. The Plago package is available for \$500, which covers all future updates and new versions, from 33 Jay Street, 11201.

RCA Providing 'CIF' System To Spectra-Equipped Banks

MARLBORO, Mass.—Banks with RCA equipment can build and access a combined data base containing all customer account relationships and activity with the on-line Customer Information File (CIF) system now being distributed by RCA.

Developed by the Fidelity Bank of Philadelphia, the RCA CIF initially provides inquiries through CRT units into corporate accounts, and individual savings and checking accounts.

By combining on-line inquiry and file building with a data base that shows a bank's entire experience with a customer across all applications, CIF enables the bank to improve its service while achieving significant operation economies, RCA said.

Input of new data into customer records in the RCA CIF system is done only once through the use of RCA Video Data Terminals—CRT devices with attached typewriter keyboards. This data is automatically cross-referenced among all customer-related accounts. Using the same VDTS, data can be retrieved by keying in either the customer's name or account number.

Implemented on an RCA Spectra 70/45 with 131K bytes of real memory under TDOS, the CIF system will function also on the RCA 6 under DOS, according to a company source. The system requires a 590 direct access disk unit on the 70/45, an 8590 on the RCA 6, with the number of disks assigned to CIF dependent on the number of customers and the amount of data to be stored in each file.

The RCA CIF system is being made available without cost to all current and future users of the required configuration.

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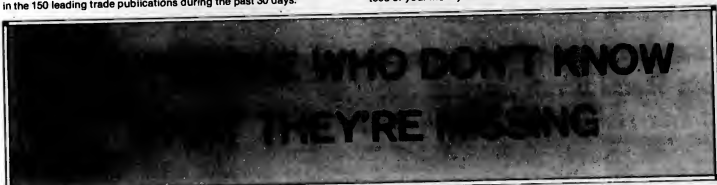
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Group I New Products and Applications

The data offered in these Reports and Profiles describe new products being offered to and by the data processing industry included are applications for these products as well as new applications for existing products. Reports include names of suppliers; users who have developed new applications for products; new general developments in the field.



(Circle No. on coupon)

- 1 Computers & Minicomputers
- 2 Terminals
- 3 Software
- 4 Components
- 5 Supplies
- 6 Services

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Group III Industry News

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- 7 Mergers & Acquisitions
- 9 New Companies & Services
- 10 Marketing Trends & Forecasts

Group IV User-Markets: Developments and Applications

Data-processing developments and applications for specific markets and uses of available products (hardware, software, services, etc.) are highlighted in these Reports and Profiles. Included are data detailing how the product is used for specific jobs, its value to specific user-markets, users of the product; companies offering the product; availability of the product; components of packages for user-markets.



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- 11 Accounting
- 12 Banking
- 13 Insurance
- 14 Liability
- 15 Communications
- 16 Medicine
- 17 Data Processing
- 18 Transportation/Reservations
- 19 Financial
- 20 Information Transfer
- 21 Education
- 22 Law Enforcement
- 23 Legal
- 24 Management

Group V Reports and Profiles for Specific Job Titles

These Reports and Profiles contain data of interest to people with specific responsibilities in the field of EDP. They deal with developments in data-processing which have a direct bearing on the type of work performed in these positions.

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Bits and Pieces

Data Acquisition System Programmed Using Basic

PALO ALTO, Calif.—A simplified modular data acquisition system from Varian, the 620-based Adaptecs provides real-time analog and digital processing and testing, and is programmed in Basic. The system is said to offer a high degree of flexibility with its unified I/O structures in both hardware and software.

All I/O operations are controlled by four Basic statements, regardless of whether the signal is analog or digital. Data acquisition rates range from 5 kHz to 50 kHz, with faster rates attainable under Assembly Language or Fortran control. Adaptecs will be available in June, in four basic configurations at prices starting at \$33,940.

DEC Adds Controller and Scanner To RSX Data Acquisition System
MAYNARD, Mass.—A universal digital controller (UDC-15) and a digital capacitor scanner (AFC-15) are offered by DEC for use with its RSX-15 industrial data acquisition and control system that uses the POP-15. The devices are intended to receive signals from a variety of industrial and laboratory instruments used in data acquisition, process control and test equipment.

As many as 11 UDC-15s and AFC-15s may be interfaced to the RSX-15. The UDC-15 sells for \$2,800 and the AFC-15 for \$5,000. Deliveries begin in May.

Microfilm Reader Handles Cartridges, 16mm Film Reels
SPRING VALLEY, N.Y.—Arcata Microfilm's Model 1114 roll and cartridge microfilm reader, in addition to 16mm reels, can accommodate 3M and Recordak cartridges by the use of snap-on adapters. The unit features a 24X optical/illumination system said to provide flat, even illumination and pin-point sharpness to the edges of the 11-1/2 in. by 14-1/4 in. screen, according to the company.

The unit features a pushbutton-reset odometer for frame location and an open film gate. It is available for immediate delivery at \$620 from 700 S. Main St., 10977.

Unit Applies 9,000 Label/hr
WILLOUGHBY, Ohio—The TRP-2 "Appli-Matic" address labeler, from Fasson Machines Products, an automatic desk-top device, can apply computer-printed, pressure-sensitive labels to flat mailing pieces at rates to 9,000/hr. The machine, priced at \$3,475, is able to handle pieces as large as 12-1/2 in. long by 13-1/2 in. wide. It is available on a two week delivery schedule from 4590 Industrial Parkway, 44094.

Large DP Wastebasket Has Casters
MINNEAPOLIS—Lightweight wastebaskets in sizes large enough to hold the needs of computer rooms from Kapko, Inc. are available with optional casters for easier handling. Available in the 25 lb., 55 gallon K240 and the 13 lb., 24 gallon K246, the baskets are available in red, white, or blue. The price of the K240 is \$49.95, and the K246 is priced at \$24.95. Casters add \$10.95 to either model. They are available for immediate delivery from 5912 Weyzata Blvd.

Two Models Offered

Ampex Reduces 360 Core Memory Cost

By Frank Plante
CW Staff Writer
REDWOOD CITY, Calif.—Two series of Ampex 360 core memory modules, the ARM-30 and ARM-2365, give the user still another opportunity to decrease the cost of his mainframe by lowering main memory costs 20%.

Available to users of the IBM 360/30 and 360 models using the 2365 memory, including the 65, 67 and 75, the Ampex core units are said to be completely hardware and software compatible with the IBM memories they replace.

Main core memory replacements units for the 360/30 have previously been announced by Fabritek, Information Control Corp., and Data Recall, sold through Computer Investors Group. Memory replacements for the 2365 are

being offered by Cogar.

Cycle times of the Ampex memories equal those of the units they replace, with equal performance, Ampex said. Memory storage capacities also match those offered by IBM for the various computers.

The Ampex ARM-30, for the 360/30, has a cycle time of 1.5 μ sec and is available in capacities of 16K, 32K and 49K bytes. Up to four ARM-2365 modules, with a total capacity of 1 Mbyte, may be used with an IBM 360/65 or 67. As many as eight ARM-2365 modules (2 Mbytes) may be used with a 360/75. Cycle time is 750 nsec.

Maintenance by IBM on the rest of the system is not affected by the addition of the Ampex memory, Ampex said. The standard IBM lease contract, the com-

pany explained, allows a user to attach foreign units to the leased systems as long as they have no detrimental effect on system performance. But IBM told CW it could bill the user for any damages or increased service time caused by such attachments. Ampex will supply maintenance for its memory units.

A single 16K-byte module of the ARM-30 leases for \$805/mo, and sells for \$32,000. Additional modules are proportionately less expensive since power supplies and test equipment are included in the first module. A 32K module is priced at \$42,230, for example.

A single 256K-byte module of the ARM-2365 leases for \$7,400/mo; purchase price is \$308,600. Both Ampex memories can be upgraded in the field, Ampex said, and are available in 60 days.

Punched Card Use Grows Despite Alternatives

By Georg M. Herzfeld
Special to Computerworld

Despite daily pronouncements of card obsolescence, the industry is more likely to witness U.S. acceptance of the metric system before it sees a decline in the use of punched cards. Although there have been major attacks on the punched card, the use of cards continues to grow, especially as an output medium.

The main thrust against cards is really an alleged movement toward more efficient source document coding. Key-entry systems, mark sense reader OCR and magnetic ink character reading (Micr) have been developed as methods to reduce some very real DP expenses.

Card output, in the form of turnaround documents, is gaining increased popularity. Computer punched documents allow convenient, inexpensive input without recourse to human handling and keying. OCR and Micr, of course, offer the same advantages. But offsetting disadvantages limit their use except in very specialized applications.

The reason for this is unfortunate and

obvious—OCR and Micr are economically limited to reading simple preprinted forms or highly stylized fonts.

Despite painfully slow development and consistently overestimated volume, Mark Sense Reading seems to be on the verge of acceptance—especially when combined with computer punched output.

Increased use of punched cards is based on significant economic and human-oriented considerations. IBM has carefully avoided any product offering that is a direct replacement for card equipment. To the contrary, it has recently introduced three new card readers, two of which have mark sense capability. Univac also has introduced new card equipment.

Far from eroding, the number of cards used has increased each year. A decade ago, the rate was about 5% per year. Currently, the figure is in the 10% - 20% range. And, except in the large centralized in-house applications, cards will remain the most economical and flexible means of data coding.

As computer technology is required by more sections of business and industry,

the card use will continue to grow. As long as people are involved by mail, there will be punched cards. Turnaround documents, particularly invoicing, currently represent the largest use of cards.

We see a more significant trend to punched card equipment being used as terminal devices.

The increased use, however, of remote input terminals will be accompanied—sometimes, maybe "next year"—by remote output punches. This equipment, limited by transmission line speed, will buck the trend for faster card punches. Instead of the 100 to 300 card per minute requirements of satellite punches, be, most likely, on the order of 30 to 60 cards per minute.

While it would please many individuals to agree that the card is dead, the opposite is true. Keyboard or other data entry systems may have some future impact on the keypunch, but only when IBM decrees it.

Georg Herzfeld is vice-president of Data Products, Denver, Colorado.

Microprogrammed Controller Adapts CRTs to Any Computer

GREAT NECK, N.Y.—Three models of a new line of CRT terminals from Sugarman Laboratories, Inc. are microprogrammed to enable them to be adapted to any computer.

Called the \$6/rm, 4000; the units include the model 4200, a CRT replacement for teletypewriters; the 4300 which adds text editing capabilities; and the 4700 which has a graphics capability.

All models feature a controller which uses a preprogrammed computer with one or two Kwords of memory. The computer is used to make the devices with such terminals as the IBM 2765 and IBM 2741. The processor, the controller unit, can be easily modified to adapt to another computer, in the field.

Text Scrolling Included

The three models each have a screen capacity of 20 lines of 80 characters. The 4200 includes editing capabilities such as character/line insert or delete. Text scrolling including roll up and down, tab stops, and format control are included. Upper case characters are shown as white on black while lower case characters are displayed black on white. The unit is priced at about \$3,000.

The 4300 is a true upper/lower case device which incorporates all of the features of the 4200. It features direct cursor addressing and cursor position inquiry by the computer. The unit is expandable to text specifications or to those of the 4700. The price is about \$3,400.

The 4700 incorporates all of the features of the 4300 and adds to it graphics capabilities. It can be used for dot or vector drawing. In the incremental model it calculates line segments for curve tracing. The unit sells for about \$4,200.

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Firms Ask FCC to Reconsider DP Ruling

WASHINGTON, D.C. — A number of companies, including several affected common carriers, have petitioned the Federal Communications Commission for reconsideration of its recent ruling that companies which offer communications-related DP services to users should remain unregulated [CW, March 24].

Western Union Telegraph Co. asked the FCC to stay its final decision. WU said there is substantial likelihood that its petition will result in reconsideration and revision. Three commissioners, WU noted, did not find any valid justification for the prohibition against the purchase by carriers of DP services from affiliated companies. The FCC had ruled four to three, International Telephone & Telegraph Corp., in its petition, said part of the commission's final decision "would re-

quire the elimination of the symbol 'ITT' from the name of either its communications subsidiary or its DP division. If

Communications

either company were compelled to abandon the use of the symbol, it would be required to reestablish its image at con-

siderable expense.

Meanwhile United Telephone System followed the lead of GTE Data Services and went to court, filing a notice of review with the U.S. Court of Appeals in St. Louis. The GTE unit had previously filed a similar petition with the U.S. Court of Appeals in New York, and industry sources indicated that all actions will probably be consolidated there.

WU Wins Hybrid Link Approval

WASHINGTON, D.C. — Western Union has been authorized by the FCC to build eight new microwave stations and modify three existing stations, including installation of terminal equipment, between Cincinnati, Ohio, and Atlanta, Ga.

The building will provide WU with a "hybrid" digital and analog extension of its transcontinental microwave system. No new services are presently planned for the link, the company said.

The action will permit release of more expensive facilities now being leased from AT&T, provide for TWX trunk requirements, and meet normal communications channel growth requirements, according to WU.

Objections to the WU proposals by Microwave Communications Inc. (MCI) and an MCI subsidiary were denied by the commission. MCI claimed WU had not adequately shown a need for the change.

MIS Files as Carrier For Shared Channel

WASHINGTON, D.C. — Management Information Systems Inc. (MIS) has filed a tariff with the FCC for a shared-use leased channel between California and Hawaii.

The filing, apparently made at the suggestion of the FCC Common Carrier Bureau, caused an immediate reaction from Western Union. WU charged that since the filing was made without any attempt by the MIS to become certified as a carrier under Section 214 of the Communications Act, the plan is illegal.

WU also claimed that MIS is violating Bell System tariff provisions related to shared use.

In the proposed tariff, MIS said it would do the billing, including a "service fee" in addition to line and multiplex charges.

Data Briefs

Canadian Task Force Seeks Carrier-Computer Comments

OTTAWA, Ontario — Interested parties have until May 31 to submit comments regarding the relationship of communications common carriers and DP services to the Canadian task force attempting to develop a formal government policy.

Meanwhile, Instant World, a new report of the Canadian government's Telecommission, has suggested the need to establish an agency to oversee the communications industry, including carriers and computer services.

Copies of the report are available for \$3 from Information Canada, here.

IXI Adds 1,800 bit/sec Modem

MINNEAPOLIS, Minn. — A 202 type data set, with operational characteristics capable of being altered to meet specific requirements, is available from Information Exchange Systems, Inc. (IXI).

The Bell-compatible unit, employing FSK, can transmit in either half- or full-duplex mode at speeds up to 1,800 bit/sec.

Options include a variety of transmission and terminal equipment interfaces. It is priced at \$400 to \$600 from 3312 Gorham Ave., 55426.

IT&T Control Replaces IBM 2701 EAST RUTHERFORD, N.J. — Users operating IBM 2250 CRT terminals or comparable units in remote mode can save money by replacing IBM 2701 control units with 3127 Data Adapters, according to ITT Data Equipment and Systems Division.

The 3127 simultaneously handles four display control lines operating asynchronously from 1,200 bit/sec to 9,600 bit/sec, or asynchronously at 600 or 1,200 bit/sec, the company said. The Data Adapter, with four line terminations, leases for \$44/mo including maintenance, from East Union Ave., 07073.

Analog Data Posted to TTY

HOUSTON — Data Graphics Corp.'s DGC-308 coupler is designed to monitor analog signals generated by one or more measuring instruments, display the signals digitally and record data on a teletypewriter.

The unit includes all circuitry for analog-to-digital conversion, data control and formatting, the company said, and the teletypewriter may be a remote computer terminal or an off-line recorder. Prices for the DGC-308 start at \$1,300 from 8402 Speedway Drive, 78230.

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On Social Issues

CPP Will Hold Forum at SJCC

By Edward J. Bride

CW Staff writer
ATLANTIC CITY, N.J.—Computer People for Peace (CPP) appears to have made its point, and there will be extra sessions for social issues at the Spring Joint Computer Conference here, May 18-20.

The American Federation of Information Processing Societies (AFIPS), sponsor of the conferences, announced CPP would be given one of the two "science theaters" in the old part of the Convention Hall, to conduct an open "forum for concerned citizens."

CPP had been offered a room in a hotel, but declined in favor of being close to the commercial exhibits. AFIPS also said it would attempt to set up chairs and public address equipment in a "theater-in-the-round" fashion so, as CPP had requested, the atmosphere would be more "in-

timite."

AFIPS will hand out to all conference registrants a schedule of the CPP agenda; the topics and times are expected to be, chiefly, the following five:

- Data banks: "The Right to Be Unlisted" (Tuesday p.m.)
- Health systems (Wednesday a.m.)
- Computers and the military (Wednesday p.m.)
- Minority groups and women in the computer industry (Thursday a.m.)
- Unemployment and the right to work (Thursday p.m.)

Guarded, Then Pleased

Early reaction from CPP was guarded, then CPP individuals and spokesmen seemed pleased that their requests had been met.

AFIPS noted that all attendees would need the usual conference identification badges to walk through the exhibit hall to get to

the meeting rooms. While full (paid) and student registrants are normally the only persons allowed into technical sessions, AFIPS said it had not considered whether to allow exhibitor guests into the "open forum."

The science theater will be available to CPP for "essentially the entire conference," a source at AFIPS related, beginning with Tuesday afternoon.

CPP has been continually critical of management-oriented conferences which "ignore" social implications of computers, and has interrupted or picketed previous joint computer conferences in Boston and Atlantic City.

ABFIM Cancels Meeting

WASHINGTON, D.C.—The Association of Business Forms Manufacturers has canceled its 1971 annual meeting scheduled for this week in Miami.

Reason for the cancellation, according to John R. deLami, executive director, is that ABFIM is in the process of merging with the Printing Industries of America's Business Forms Division.

COMPUTERWORLD

societies/user groups

'Week' to Honor DPMA

BUFFALO, N.Y.—Several local groups have combined efforts for a full week of informing the public about computers, calling their efforts the Niagara Frontier Computer Week.

Committees from the local chapter of DPMA, the Association for Systems Management and the Students Cybernetic Laboratory will conduct the events, consisting of movies, a student exposition, dinner meetings and the crowning of "Miss Data Processing."

All activities will take place next week, and are intended to commemorate the 20th anniversary of the Data Processing Management Association.

Included in the activities will be guided tours of DP centers, a management seminar and the concluding event, the International DPMA Directors Meeting on Saturday, May 15.

Most of the events will be open

for free admission to the general public, except for the business activities of DPMA.

Call for Papers

SECOND ANNUAL CANADIAN COMPUTER SHOW, SEPT. 15-17, TORONTO

The purpose of the competition is to encourage original use or developments by Canadians in the computer field. Papers should describe original concepts in the DP art in Canada. Topics include: standardization in DP applications, data base analysis and design, relations among different management systems, critical review of the state of the art, training and planning for future needs and technical topics of importance to the computer field.

Authors must be residents of Canada, but persons working outside the country temporarily are also eligible. Persons wishing to enter must submit an "application for participation" form, and a preliminary abstract of the paper. Deadline for the application form is June 30, 1971. Three copies of the completed paper are required by July 31, 1971.

For further details contact: Canadian Computer Show, Paper Competition Chairman, P.O. Box 343, Toronto Dominion Centre, Toronto, 111, Ontario.

SECOND ANNUAL SYMPOSIUM OF THE ACM SIGCOSP, OCT. 25, 1971, WASHINGTON, D.C.

Papers are invited for presentation at the Special Interest Group on Computer Systems Installation Management Symposium entitled "Economic Considerations in Managing the Computer Installation."

Specific topics include: economic impact of multivendor environment, change policies for computer services, cost effectiveness of facilities management, economic of scale (centralization vs. decentralization).

Abstracts of less than 250 words chairman by May 17, 1971. Deadline for receiving five copies of the final draft is July 19, 1971.

For further information contact: I. Feldman, Wiley Systems, Inc., 6400 Goldensboro Rd., Bethesda, Md. 20814.

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University, Institute Agree to Credit Transfer

MINNEAPOLIS - A joint venture between the University of Minnesota and Control Data Institute will attempt to meet the need for well-trained computer industry personnel with a broad-based educational background as well as technological expertise. The program allows students at Control Data Institute here to receive credit from the university's General College toward either the Associate in Arts or Bachelor's Degree from the university.

Such graduates of the combined program can thus receive both a Control Data Institute

ment is located at the Institute. CDC says its cooperative program with the university represents a unique pattern of career training. For the first time, it says, a major university and a corporation have combined resources in an effort to integrate academic and practical education.

"Occupational surveys reveal government's and industry's growing need for technicians and specialists," Dean Alfred Vaughan of the university's General College said. "Technical/vocational programs are difficult to establish, qualified instructors are hard to find, equipment is costly, and colleges and universities working independently are hard pressed to keep pace with the rate of change in the computer field. Cooperative programs such as this between the university and Control Data Institute are pioneering efforts to coordinate and utilize rather than duplicate wastefully the resources of post high school career education," Vaughan added.

A similar program between Elkins Institute and Southern Methodist University enables the trade school students to receive up to 30 credit hours toward a degree in computer science or business administration from SMU (CW, April 28).

After a year of study to qualify as systems technicians or programmers, the students can continue through the college level and work in the DP field, or after satisfactorily completing six months of study at Elkins, enter the job market as a programmer.

The Minnesota-CDI set up would seem to stress the need for a general education for employment in the technical professions, whereas the Elkins-SMU arrangement focuses on computer science or business administration specialization.

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CI Notes

Trustee to Run Viacom

BOSTON — There will be a court-appointed trustee running Viacom, now that a federal judge has granted an SEC petition that the terminal market be removed from Chapter 11 of the Bankruptcy Act to the more stringent Chapter 10.

Viacom filed for Chapter 11 last February, and continued to be operated by its own officers.

One of the likely actions of the new trustee will be a thorough examination of Viacom's financial dealings. The SEC had argued that the loss of over \$30 million of public investor's money deserved some looking into.

Raytheon Sells Memories

LExINGTON, Mass. — Raytheon Co. will sell its memory and module product lines to Data Technology Corp. The product lines include analog logic modules and Bix memories. The value of the proposed transaction was not disclosed.

Raytheon also announced the decision to transfer its Raytheon 700 Series digital computer line and its line of computer peripheral equipment to the Norwood, Mass., headquarters of Raytheon Data Systems Co., from Santa Ana, Calif.

Incomet Signs \$15 Million Pact

MARLBOROUGH, Mass. — Incomet has signed an agreement with the Transac Division of CIT-Albertus COE company, involving a minimum of \$15 million in Common Market sales of Incomet products over the next four years.

The agreement calls for the completion by late 1971 of a French manufacturing facility for the licensed production by Transac of Incomet computer terminals.

Supershorts

Cogor Corp. will reportedly supply the semiconductor memories for the new International Computers Ltd. 10040 computers. The firm was identified as the supplier in ICL press material released in Germany, but, in keeping with a policy of not commenting on its OEM customer base, Cogor would not confirm the report.

IBM will announce another "new-old" machine in the tradition of the 360/22 soon. Most industry sources indicate that the "new" 360/28 will be a stripped 360/40.

SCI-TEK, Inc. has acquired Univac's Information Systems Division metropolitan New York Service Bureau. The acquisition, valued in excess of \$5 million, includes a Univac 1108 computer installation and service bureau in Minneapolis, Long Island.

Europe's first Sigma 9 is to be installed by a London-based time-sharing bureau. CMC Information Systems Ltd., which has progressed to the \$17,715,000 grant from its first machine, an IBM 1130, via a Sigma 9 in five years. CMC's hole about 1% of the UK time-sharing market and is looking to the Sigma 9 to boost its share to 4%.

DP Study Looks to 1980

Hospital Market to Reach \$1 Billion

NEW YORK — Hospitals in the U.S. will spend almost \$1 billion on hardware and software in 1980, up from total expenditures of \$160 million in 1970, according to projections prepared by Frost and Sullivan.

Hardware sales to hospitals presently amount to \$70 million and will rise to \$450 million in 1980, the report states, while software sales will rise from a base of \$90 million to \$530 million in the same period.

The largest share of the hardware/software market is private hospitals, Frost

said, Sullivan said, but "university and government hospitals will be the leaders in expanding their automated information systems."

"Those who are successful in selling hardware and software to meet their needs will be in a preferred position to capture a large share of the private hospital market as it grows during the 1970's."

Hospitals currently account for about 40% of the \$70 billion spent annually for

health care, the report claims. The annual expenditure for health services is expected to rise to over \$80 billion by 1980.

The developing market "is almost totally dependent upon the availability of adequate computer programs," according to the report. Total hospital expenditures for software, it states, will grow at increasing rates starting with 15% this year and reaching nearly 24% by 1979, for an overall average of approximately 17%.

Government Hospitals

The hospitals operated by the Federal Government account for around 30% of the software expenditures in 1970, even though they comprise only 6% of the hospitals of the country.

University hospitals accounted for 35% of the 1970 software market, followed by state hospitals, 20%, the report states.

Various groups of hospitals sharing computer systems or facilities spent \$20 million on software development during the past year and are expected to account for \$50 million in 1975 and exceed \$100 million by 1980, according to the Frost and Sullivan study.

For hardware the government-operated hospitals will spend around \$56 million in 1975 and \$112 million by 1980, according to the projections. As for state facilities will be about \$33 million in 1975 and \$57 million in 1980.

The university-affiliated hospitals will spend about \$63 million in 1975 and \$135 million by the end of the decade. Private hospitals, many of which are associated with the universities and are covered twice, will show about the same growth, also spending about \$135 for hardware by 1980.

Regional networks or shared computer systems will be the fastest growing segment in terms of hardware, jumping from \$14 million in 1970 to \$44 million in 1975 and \$90 million by the end of the decade, the report indicates.

The report notes that at present "the high cost" of display equipment is limiting its use, but predicts that if the price drops a tremendous market will develop for the units. A display market of between 40,000 and 60,000 units during the next 10 years is estimated.

Emergence of Remote Processing Expected to Spur Use of CRTs

LOS ALITOS, Calif. — The emergence of remote processing will spur the use of CRT terminals and increase the installed base by over 380% in the next five years, Creative Strategies Inc. predicts.

In a recent study of the CRT market, the firm expects the value of installed terminals to increase from \$285 million in 1969 to almost \$1.1 billion by 1975.

CRTs used as teletypewriter replacement will account for \$120 million of the installed base in 1975, up from the present \$4 million. The enhanced editing terminals market will be worth \$370 million and multiterminal units will be valued at \$475 million by then, up from \$65 million and \$190 million respectively.

Presently there is \$6 million worth of low priced graphic units installed, and this is expected to grow to \$55 million in five years. The value of high-priced graphic units will triple during the period for the present \$20 million to around \$60 million, the firm predicts.

The financial and brokerage market presently has the largest installed base of CRTs, valued at \$91 million. That market is relatively saturated and will grow by only 58% to \$142 million by 1975, the study shows.

Reservations Growth Potential

The fastest growing area will be hotel, auto and other reservation applications,

which will show an increase from \$1.2 million to \$60 million in installed value over the same period.

The time-sharing industry will grow from \$7.5 million to \$126 million, showing the largest dollar growth in terms of installed base.

The airline reservations industry presently uses terminals valued at \$48 million, and will increase its share to \$125 million by 1975, while the insurance industry will show an increase from \$36 million to \$104 million.

The key punch replacement market now accounts for \$2 million of CRTs and will increase to \$48 million. Military and government uses will increase from \$15 million to \$84 million during the same period.

Overall, interactive CRTs fit into a remote terminal industry that was estimated at \$650 million in 1969 and which will grow at a compound annual rate of around 37%, according to the Creative Strategies projections.

The firm further states that at present 32% of the computers installed are capable of some remote processing.

More than 50% of the installed systems will have remote capability by 1975, the report notes. Memory capacities of large computer systems will be expanded to the point where large centralized data bases will be practical over a wide range of applications by that time, it concludes.

Trade Show Crystal Ball Appears Hazy

By E. Drake Landell Jr.

CW Computer Industry Editor

Regional trade shows — either specifically for the computer industry or cutting across industry lines — have been drawing more and more computer industry exhibitors and three recent shows indicate that the results can go from good through indifferent to bad.

The shows seem to pop up in the early spring — possibly in preparation for larger trade shows later — and the computer firms in attendance use them as warmups for the salesmen that will have to man the booths at the Spring Joint in Atlantic City.

The smash hit of the early season was the 24th Annual Southern California Business Show in Los Angeles, which drew a crowd of more than 10,000, according to CW's West Coast Bureau.

The vast Florida Industries Exhibition in Orlando was either good or bad for the few computer firms present, depending

on their product lines.

The only all-computer show of the spring training season was the Southern Computer Conference in Atlanta, Ga. Although drawing fewer attendees than had been anticipated, those that came were termed "good" contacts by the exhibitors. However, the quality didn't make up for the lack of quantity for many.

On the Road

At the Florida show, which included exhibits from all types of firms located in the state, the time-sharing houses called the exhibit well worth the effort. Computime said it was talking to potential customers among the other exhibitors as well as the attendees.

On the other hand, one large terminal maker said the show was slow and he

wasn't seeing many buyers.

The real surprise was the Los Angeles meeting, especially since Southern California is one of the areas hardest hit by the recession. The show picked up nine new DP exhibitors, with a few being toward peripheral and communications gear.

Enthusiastic Mood

The mood was enthusiastic, especially when compared to all of the "gloom and doom" talk of recent months. Exhibitors were DP sales off the floor, lead by the beale by Business Machines & Computers (which recently bought 38% of Clary Datacomp), of two systems of the exhibit.

Spring training is winding down and the bid show season is just under way. The weeks with the SJCC. Initial indications are cloudy, with a few rays of sunshine. Results for the three practice sessions will be read any way the particular viewer chooses.

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Here and Now. This ad is just a few weeks premature. The design is fully proved and tested. The prototypes are in existence. But our claim to production quantities will have to wait until April.

EM Electronic Memories is a division of Electronic Memories & Magnetics Corporation, 12621 Chadron Avenue, Hawthorne, California 90250. Telephone (213) 644-9881.



("Just one little 'new-and-sensational' wouldn't hurt.")

DP Stocks No Longer On the Top

By Michael Merritt

CW Staff Writer

It is now open season on guessing what — if anything — that means up there means.

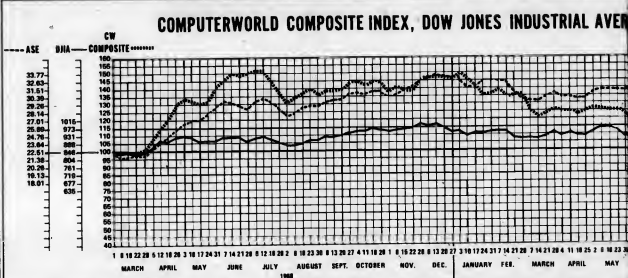
Prize for the best entry will be one share of Viatron. Second prize will be two shares of Viatron.

So while you sit reading everyone's predictions of when the Dow is going to break 1,000, you can have a little puzzle to divert you from thoughts of the poor farm.

Financial

Within a month of the inception of CW's computer stock index the rise began, and by the summer of 1968 the index had grown over 50%. And it stayed at a high level for quite a while, declining slowly through 1969, and not crashing down until the disasters of 1970.

But, strangely, the glamorous computer stocks were not as fantastically glamorous as they may have seemed. The American index equalled the performance of the DP shares by November 1968, and was a better performer throughout almost all of 1969. The Dow, of course, was relatively sluggish through 1968



What Does the Chart Show?

All three indexes — the Dow Jones Industrial, the Amex and CW's Composite computer stock index, start even on March 1, 1968. At that time the Dow was at 846 and the Amex at 22.51.

Each division on the chart indicates a 5% change, so a one division increase from the start would bring the CW index to 105, the Dow to 888 and the Amex to 23.64.

So while the three indexes vary considerably in absolute value, the chart represents equally similar percentage changes in the three.

The CW composite index is the average of the five sector indexes that appear in CW weekly, and represents 50 leading — and in some cases lagging — computer stocks.

and 1969, only once reaching a 15% difference from the March base price.

The computer section of the stock market was weak all during 1969, we can now see, losing almost a third of its peak value at one time. A slight rally in the fall brought the index back up, and computer stocks

began 1970 20% above the base price.

Then the fall began. Week after week, with few respite, prices fell. By the time the American index began showing the effects of the recession in April, the computer stock index had already dropped 30 points.

And when the crunch hit the exchange indexes, the computer stocks reacted like Russia invaded by the Teuton hordes. Between the middle of April and the middle of August the CW index dropped over 40% of the base, reaching a low of about 45. In the same period the American index dropped 15% and the Dow about 10%.

Since the deflation of com-

puter stock prices, the CW index has followed the trend of the Dow and Amex, but that's all. From the beginning of the year to the end of March the CW index went up 15%, the Amex 15%, and the Dow slightly more than 10%.

The computer stocks are following the general improvement of the market, reacting to lower interest rates, increased money supply and new investor confidence. They are not, however, showing any particular strength in themselves.

But, remember, when you burn off a plot of land to get rid of the brush in the fall, you may find that there's a healthy new crop of cannabls in the spring.

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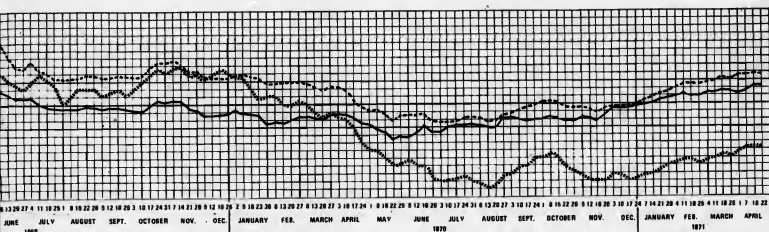
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AGE, AND AMERICAN STOCK EXCHANGE INDEX MARCH 1968 THROUGH APRIL 1971



DEC 9-Month Net Drops 20%

MAYNARD, Mass. — Nine months earnings at Digital Equipment Corp. (DEC) have dropped over 20% from the year-earlier figure.

Sales of the minicomputer maker expanded to \$104 million from \$97 million in 1970, but earnings dropped from \$10.4 million to \$7.7 million.

On a per share basis, earnings for the nine months fell from \$1.10 to 78 cents.

Commenting on the financial results, Kenneth H. Olsen, DEC's president, pointed out that the company is continuing its investment in research and development and its sales and service organization.

More than 300 sales and service engineers have been added over the past year and research and development efforts have resulted in the introduction of a variety of new products, he noted.

DEC's performance was not as poor as had been expected in some quarters.

Third quarter earnings worked out to 23 cents a share, which, while it fell below the 30 cents a share some analysts had been predicting, was also well above the 15 cents a share figure that came out of a recent meeting of DEC officials with securities specialists (CW, April 7).

Acquisitions

Congress, Inc., Rockville, Md., has acquired Computer and Programming Analysis, Inc. from Lease Management and Financing Corp. Congress plans to use the New Jersey facility for development, manufacture and maintenance of a line of computer monitoring devices.

Data Computing, Inc. has become the Phoenix Division of Tally Corp., Kent, Washington. Data Computing produces the Typewriter series of communications printers and Cardliner.

Data Products Corp. has acquired Core Memories, Inc., Mountain View, Calif., producer of ferrite cores, stacks and complete memory systems. Data Products designs and manufactures peripheral DP systems.

Varian has obtained a minority interest in Micrographics Technology Corp., Santa Ana, Calif. MTC manufactures microform equipment. Varian has an option to obtain full ownership of MTC.

Corning Glass Works has agreed in principle to acquire Components, Inc., Biddeford, Me., manufacturer of data acquisition processing systems and subsystems for the satellite and space markets. The agreement is subject to approval by the boards of directors of both companies and

the stockholders of Components, Inc. Under the proposed plan, Components stockholders would receive 0.0435 shares of Corning common for each share of Components, Inc.

Telesprocessing Computer Corp. of America, Inc. (Telcom) has purchased the business of the Oklahoma City computer center of University Computing Co.'s Data Link Division. Telcom will continue to operate the center.

Consultants Associated, Inc., Wakefield, Mass., has become a subsidiary of Edutronics Systems International, Inc. Both firms produce and distribute audiovisual programs for DP instruction.

PUBLISHING COMPUTER SERVICE, INC., 1000 16th St., N.W., Washington, D.C. 20036, a company providing a variety of DP services primarily to the publishing industry, has filed to register 200,000 shares of common stock at \$5 per share, are intended for financing the opening of two sales and service offices and for general corporate purposes.

STORAGE TECHNOLOGY CORP., 2270 S. 88th St., Louisville, Colo., a company organized to design, develop, manufacture and market computer peripheral equipment, has filed to register 375,000 shares of common stock, proceeds, at \$13 per share maximum, are intended for use in the development of added

NCR Revenues Rise, But Earnings Drop

DAYTON, Ohio — Worldwide revenues of National Cash Register for the first quarter of 1971 totaled \$244 million compared with \$308 million for the earlier period, an increase of 12%.

Revenues from international subsidiaries and branches rose 27%, while domestic revenues were approximately the same as last year.

Consolidated net income plummeted, though, to \$5.3 million, from the \$8.6 million reported for the first quarter of 1970. On a per-share fully diluted basis, this amounted to 25 cents compared with 39 cents in the prior year.

Both the revenue and earnings figures for 1971 are restated to

include the results of Appleton Coated Paper Co. on a pooling-of-interests basis, Appleton was acquired by NCR last fall.

The company's first-quarter earnings last year were the highest ever achieved by NCR for the period, due to heavy equipment deliveries, and represented a 22% increase over the previous first-quarter record, noted Robert S. Oelman, NCR chairman.

"Domestic shipments for the first quarter of this year continued to reflect the softness of the U.S. economy. This was not unexpected, since shipments tend to follow by several months the receipt of incoming orders."

Domestic incoming orders are now running slightly ahead of last year's pace, Oelman added.

Incoming orders from abroad are maintaining the level of a year ago, he said, even though the peak of the UK's decimalization program has been passed.

The NCR chairman said that during the 1971-1972 period, the company will be introducing more major new products than in any comparable period. These include additions to the NCR Century Series computer family, new types of data terminals, a new-generation electronic accounting machine series, and various office products.

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EM&M Reverses Trend With Profit

LOS ANGELES — Turning around from a \$14 million loss last year, Electronic Memories and Magnetics (EM&M) has reported a profit of \$483,000, or four cents a share, for the first quarter.

The first quarter last year, the company made \$784,000, or 10 cents a share.

Sales were up slightly to \$22.2 million in the 1970 quarter. EM&M also took advantage of a federal tax credit of \$574,000, or 11 cents a share, which brought total net income to \$1.1 million, 15 cents a share.

Prices are firming in the disk pack market, and EM&M's rate of off-lease returns have fallen, according to EM&M President Trade C. Taylor.

The first quarter reorganization

and cost-cutting "coupled with somewhat improved market conditions, will produce both short- and long-term beneficial results," he added.

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New Registrations

PUBLISHING COMPUTER SERVICE, INC., 1000 16th St., N.W., Washington, D.C. 20036, a company providing a variety of DP services primarily to the publishing industry, has filed to register 200,000 shares of common stock at \$5 per share, are intended for financing the opening of two sales and service offices and for general corporate purposes.

STORAGE TECHNOLOGY CORP., 2270 S. 88th St., Louisville, Colo., a company organized to design, develop, manufacture and market computer peripheral equipment, has filed to register 375,000 shares of common stock, proceeds, at \$13 per share maximum, are intended for use in the development of added

features, new models and other products, and for other corporate purposes. The underwriter is C.E. Underberg, Towbin Co., 61 Broadway, New York 10006.

CONSOLIDATED COMPUTER LIMITED, 48 Yonge St., Toronto 1, Ont., a company primarily engaged in the production of a computer data preparation system, filed to register 600,000 shares of common stock, proceeds, at \$15 per share minimum, intended to repay short term bank indebtedness incurred or to be incurred for working capital purposes, to pay suppliers for equipment used for working capital and other corporate purposes. Shearson, Hamill & Co., Inc., 14 Wall St., New York 10005 is the underwriter.

Send to: Computer Protection/Insurance Workshop
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Please enroll me for the Computer Workshop to be held Monday, June 14, 1971, in Chicago at the Pick Congress Hotel. The advance registration fee of \$90 is a saving of \$15 from the regular price, \$105, if postmarked before June 1. If my plans change and I can't attend, I will get a complete refund (less \$15) by notifying you before June 14.

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Note: The fee for additional registrants from the same company is only \$75 each when accompanying first registration.

Insurance Experts

DP Security Workshop Speakers Listed

CHICAGO — Faculty members for the June 14 workshop on computer protection and insurance have been announced. They include:

- Gordon M. Paine, assistant secretary, St. Paul Fire & Marine Insurance Co., computer liability insurance including errors and commissions coverage.
- Rolf H. Jensen and Fred Zeleny, computer fire protection. Jensen is chairman and professor, fire protection engineering department, Illinois Institute of Technology. Zeleny is chief engineer, western regional

office, Factory Insurance Assn.

- Warren G. Brockmeier, director, western region, risk management department, Ebasco Services Inc., fire protection and computer risk management.

- Dr. Robert Wiper, industrial psychologist, care and feeding of computer room employees.

- Herbert T. Walworth, manager, special technical services, Kemper Insurance Co., protection of computer room employees.

Other faculty members will include managers of major computer facilities who will tell

about the ways they protect their computers and software from intrusion and other perils. Additional speakers and features will be announced later.

The registration fee for those who enroll before June 1 is \$90, a saving of \$15 from the regular workshop fee of \$105. This fee includes admission to all sessions, a continental breakfast, two coffee breaks, lunch and a complete workshop notebook. Companies may enroll additional personnel for only \$75 each when the registrations accompany the first registration form before June 1.

Orders and Installations

Philco-Ford Corp. has ordered a \$3.5 million Burroughs B6700 system for use in inventory control, payroll, industrial relations, engineering and financial reports.

The Computer Products Group of Sierra Research Corp., Burlington, Mass., received an order for its Model SDA-770 data acquisition system from the Van Brode Milling Co. of Clinton, Mass. The system will operate over leased telephone lines collecting data on time, attendance, and production from five different plants.

The University of Calgary has leased a Control Data 6400 to process research and instructional applications.

A Burroughs B3500, valued at more than \$484,000, has been installed at Control Industries, Inc. of Kansas City, Mo.

Xerox Sigma 3, Sigma 5 and Sigma 7 computers have been ordered by TRW Controls Corp. of Houston for use in the company's electrical utilities energy management systems and pipeline control systems.

The Cherry Hill School District, Cherry Hill, N.J., has ordered a Univac 9400 to provide centralized computer services to secondary schools and other locations.

An ECM-75 extended core memory has been ordered from Ampex Corp. by McGill University of Montreal, Canada.

A Datacraft DC 6024/3, valued at more than \$150,000, has been installed in the Engineering Computing Laboratory of the University of Wisconsin in Madison.

Burger King Corp. has installed a Burroughs B2500 system, valued at more than \$560,000, for general accounting purposes.

NCR Century 200s have been installed by the Kansas State Bank & Trust Co. of Wichita and First Computer Services, a subsidiary of First National Bank of Ruston, La. A Century 100 has been installed at Good Samaritan Medical Center, Zanesville, Ohio.

Sandoz-Wander, Inc., Hanover, N.J., has installed three IBM 2770 data communication systems.

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Mary Pickett
didn't join ACM
just to save \$30 at
the Spring Joint
Computer
Conference.

But it helped.

Mary Pickett is an associate systems programmer with RCA Computer Systems in Cinnaminson, New Jersey. Not too far from Atlantic City, site of this year's Spring Joint Computer Conference. She joined ACM in 1969, while a student at Purdue. With RCA since last August, she's getting involved in our Delaware Valley Chapter and recently switched from student to regular membership.

She's looking forward to the Spring Joint. "It's a chance to attend good lectures, see the exhibits and renew a lot of friendships," says Mary. "And my ACM membership helps. I save \$30 on admission, more than enough to cover my annual dues."

ACM membership is a lot more than conference discounts. It's technical publications, lectures, seminars and

special interest groups. A chance to get involved. And the professional pride of belonging to the oldest and most respected association in the computer field.

If you're going to the Spring Joint and don't belong to ACM, join now and save \$30 at Atlantic City. Send in the coupon today!

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